

Connecting Habitat and Survival of a Dynamic Species - Exploring Landscape Drivers of Pronghorn Survival Applying a Novel Metric of Habitat Quality

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Pronghorn are a widely distributed and demographically dynamic species whose habitats are increasingly threatened by extreme winter weather and habitat conversion. Understanding demographic parameters (e.g., survival) and the mechanisms driving their variation is critical for wildlife conservation and population management. In this study, we use GPS location and survival data from over 1,100 GPS-collared pronghorn across Montana and South Dakota to evaluate pronghorn survival in the context of other North American ungulates and assess habitat quality by directly linking habitat use to survival outcomes. We apply the newly developed Survival Habitat Quality (SHQ) model, an analytical framework that quantifies the cumulative impact of habitat characteristics (e.g., nutritional availability, drought conditions, and shrubland cover) on pronghorn survival. Our findings indicate that habitat quality varies across years and environmental conditions, particularly between perennial versus annual forbs and grasses. Notably, we found that annual forbs and grasses provide poor habitat quality for pronghorn in some regions. By leveraging the SHQ model and a large-scale dataset of pronghorn habitat use and survival, we developed a tool that can inform data-driven habitat management and conservation strategies.